

Learn How To Graph

Goals:

The goal of this activity is to learn how to make a coordinate or line graph.

Materials:

Graph paper
Pencil

Introduction:

Graphs and charts are great because they communicate information visually. Graphs are often used by scientists, but also by newspapers, magazines and businesses around the world. Sometimes, complicated information is difficult to understand and needs an illustration. Other times, a graph or chart helps impress people by getting the point across quickly and visually.

There are all kinds of charts and graphs; some are easy to understand while others can be pretty tricky. There are many different types because each one has a fairly specific use. Line graphs compare two variables, and each variable is plotted along an axis. Line graphs have a **horizontal axis** called the **x-axis**, and a **vertical axis** called the **y-axis** (Remember, that horizontal lines go from left to right, and vertical lines are drawn up and down).

Usually, the x-axis has numbers for the time period, and the y-axis has numbers for what is being measured. Line graphs can be used when plotting data that has peaks (ups) and valleys (downs), or that was collected in a short time period.

Activity:

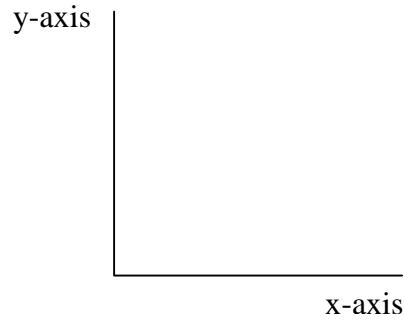
Make a line graph. First, you will need some data. John is very concerned with his weight, and each year he weighs himself to see how much weight he gained or lost. For several years he lived with his mother and aunts and ate plenty of delicious home cooking. Then, he moved away from his village and lived alone for a while. During these years of cooking for himself, he tended to eat less. Here is the chart showing what John weighed each year:

| Year | Weight (kg) |
|------|-------------|
| 1998 | 102 |
| 1999 | 104 |
| 2000 | 98 |
| 2001 | 91 |
| 2002 | 86 |

1. Now you will need to draw the axes of your graph. These are lines that tell you where to put information.

On the left side of your graph paper, draw a vertical line from the top of your paper to the bottom of the paper. You'll need some space (a couple of inches) to write stuff at the bottom of the paper and to the left of the line, so don't draw it all the way to the bottom or at the very left edge of the paper. Remember, this vertical line is called the y-axis.

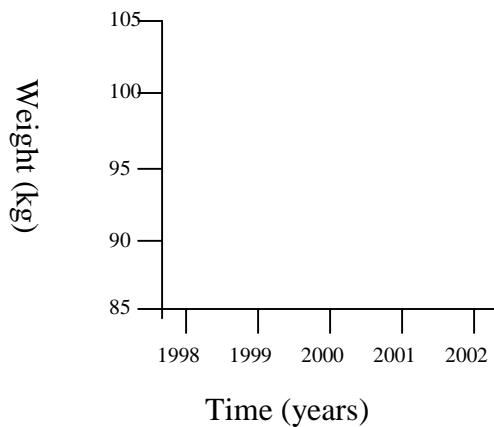
Starting at the bottom of y-axis, draw a horizontal line (from left to right) across the page. This line is called the x-axis. You should now have something that looks like a big letter "L" on your paper.



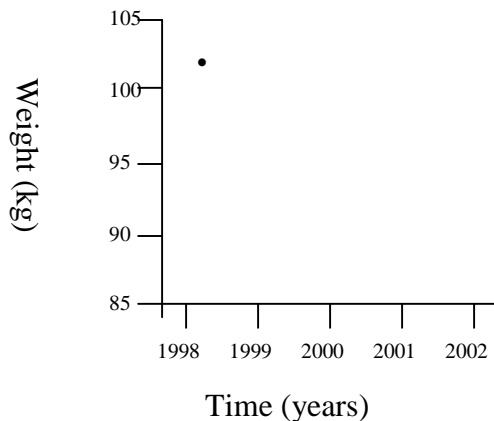
2. You now need to put marks on your x and y-axes that will tell you where to put your data. Since the x-axis will contain all the data for each year, label this axis as Time (years). Label each year on the x-axis of your graph going from the lowest to the highest year.

Label the y-axis as Weight (kg). Look at the range of weights that John has weighed. This is the y-axis data. Make as many marks along your y-axis as needed to graph all the data. Be sure the marks are spaced evenly.

John's weight fluctuated from 86 to 102kg. On your y-axis, begin with a number smaller than 86 (we used 85) for the first mark to the right of the y-axis. Now number each following mark incrementing up to at least 102 (we used 105). Your graph should something look like this:



3. Now graph your data, putting a dot on the graph for each data point. For example, in 1998, John weighed 100 kg. Your graph should look something like this:



4. When you are done graphing your data, draw a line to connect each of the dots. You have just made a line graph!

5. The final element needed to finish a graph is a title. The title should give the viewer enough information so that he or she may understand what the graph is all about. In our case, we wanted to show John's weight per year. Therefore, at the top of the graph we write John's Weight Versus Year.

6. Now that you have a complete graph, notice that John's weight tended to fluctuate year to year. What year did he weigh the most? What year did he weigh the least? When was John eating plenty of delicious food? Can you tell from looking at the graph when John moved away from home?

